

REMARKS

Reconsideration of the application as amended is respectfully requested.

Applicants also submit that this amendment presents claims in better form for consideration on appeal. Furthermore, applicants believe that consideration of this amendment could lead to favorable action or would remove one or more issues for appeal. Applicants submit that thus there is good and sufficient reason why this amendment should be admitted now.

The following remarks are responsive to the office action dated July 3, 2003.

Reconsideration of the present application is respectfully requested.

Claims 19, 21, and 26 remain pending. Claims 19 and 26 have been amended. No new matter has been added.

All references to the specification are to the issued parent application, U.S. Patent No. 5,991,161, Multi-Chip Land Grid Array Carrier, Samaras et al ("Samaras").

35 U.S.C. § 112

Claims 19, 21, and 26 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner asserts these claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Examiner also asserts that claim 19, lines 13-14 is only partially supported by the disclosure, which provides support for testing performed only on preselected conductive pads.

1) As suggested by examiner, claims 19 and 26 have been amended to include the term “preselected” as clearly stated in the specification on page 9, lines 3-13. Also suggested by the Examiner, claim 19 has been currently amended to include “*testing only a portion of those conductive pads that have solder balls attached.*” In addition, the term “only to selected ones” has been changed to “to only preselected conductive pads.” Claim 19 has also been amended to improve clarity.

Regarding whether testing is performed on the pads or mounted solder balls, Applicants state on page 8, lines 17-21, that the conductive traces are electrically coupled to the conductive pads and the components. Solder balls coupled to the conductive pads would be recognized by one skilled in the art as being electrically coupled. Thus, it would be obvious to one skilled in the art that since the solder balls, conductive pads, interposer, passive devices, and active devices (for example the cache memory in one embodiment) are electrically coupled, and that testing could therefore be performed on any of the electrically coupled components via contact with either the conductive pads *or* the solder balls as described on page 10, lines 3-8.

2) Recitation of interposer in Claim 19

As suggested by examiner, Claim 19 has been amended in accordance with Examiner’s assertion that the interposer should be recited prior to reciting the action of populating the interposer with conductive pads.

3) Markush Group used in Claim 19

As suggested by examiner, Claim 19 in line 9 has been amended using the term “the.” Applicants respectfully submit that the Markush Group now conforms to MPEP requirements.

Applicant therefore respectfully believes that the specification reasonably conveys to one skilled in the art that the inventors had possession of the claimed invention at the time the

application was filed and respectfully submits that amended independent claim 19, and claims 21 and 26, which depend upon claim 19, overcome the rejection.

35 U.S.C. § 103

Examiner asserts that claims 19, 21, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Seider (US 5,635,847) in view of Gedney (US 5,483,421), and further in view of Beers (US 5,680,936), Degani (US 5,990,564) and Hamzehdoost et al (US 5,689,091).

Applicants, in claim 19, claim the element “coupling solder balls to only preselected conductive pads of the plurality of conductive pads that are intended to be used, the preselected conductive pads being less than all of the plurality of conductive pads.” The solder balls are coupled to only the preselected conductive pads; therefore the element preselected conductive pads is a *subset* of all of the conductive pads. Applicants also disclose in claim 19, the element “testing only a portion of those conductive pads that have solder balls attached of the plurality of conductive pads on the interposer.”

Seidel discloses a plurality of solder balls disposed to the *entire array of a pattern of conductive pads* as disclosed in col. 1, lines 22-27, in col. 2, lines 60-63, in col. 3, lines 19-34, and as illustrated in Figures 1, 2, and 3. However, Seidel does not disclose coupling solder balls to selected locations other than the entire array of patterned conductive pads. Also, the entire Seidel reference is void of the terms “selected” or “preselected.” Seidel discloses in Figure 6, pin 16 and guide 34, and although pin 16 contacts guide 34, the illustration does not indicate that less than the entire array of patterned conductive pads are being tested. Therefore, Seidel does not teach or disclose the preselected conductive pads as a subset of all conductive pads. Also,

Seidel discloses testing via each of the conducting strips (col. 2, lines 60-66), each of the pins (col. 3, lines 14-34), and all of the solder balls as disclosed in col. 3 lines 40-67 and in col. 4, lines 1-5. Seidel does not teach or suggest testing *only a portion* of the preselected conductive pads (or solder balls) of the plurality of conductive pads on the interposer.

Gedney discloses an improved package for mounting IC chips on a circuit board. However, Gedney only discloses solder ball connections to *all* of the conductive input/output pads and *all* of the bonding pads on a chip carrier. Also, Gedney illustrates solder ball connections to *all* the pins in Figures 1 and 5. Therefore, Gedney does not teach or disclose the preselected conductive pads *as a subset* of all conductive pads. Gedney does not show a Figure 6. However, Seidel does show a Figure 6 that illustrates test pins in contact with all of the illustrated solder balls and the surface of a guide number 34.

Beers discloses the use of a conveyor transporting circuit boards through a production line. Beers discloses conveyors as illustrated in Figure 3 and also discloses printed circuit board 20. However, Beers does not disclose or identify the particular components that are illustrated on the circuit board. The component identified by Examiner as a semiconductor dice may be a resistor pack or other passive component within the package. Additionally, printed circuit board 20, as disclosed by Beers is not identified or described as an interposer. Therefore, Beers does not disclose or teach coupling a regulating voltage and current to the electronic dice.

Hamzehdoost discloses a method for fabricating a multi-layer substrate structure. Hamzehdoost also discloses applying a solder mask to the entire exposed surfaces of the conductive metal layer, except for select wire bondable areas and for selectable solderable areas where it is desired to have the solder balls applied (col. 3, lines 43). Hamzehdoost discloses that the solder balls are applied (col. 3, lines 61-63), and the step is illustrated in Figure 3 (col. 3, line 43). However, Hamzehdoost discloses identifying and selecting solderable areas, but does not

teach or disclose further selecting a *subset* of the selectable solderable areas. Hamzehdoost therefore fails to teach or disclose the preselected conductive pads as a subset of all conductive pads.

Degani discloses improved memory chip packages to reduce or eliminate alpha particle contamination. Degani discloses a completely different problem to be solved in comparison to Seider, Gedney, Beers, and Hamzehdoost. Therefore, Degani includes no suggestion or motivation to combine with the cited references.

For the reasons stated above, each cited reference fails to teach or suggest the claim limitations of the Applicant's claimed invention. Applicants therefore respectfully submit that claims 19, 21, and 26 are patentable over the combination of Seider in view of Gedney, and further in view of Beers, Degani and Hamzehdoost. Claims 21 and 26 include the limitations of the claims they depend upon and are thus patentable based on the limitations as discussed above for the associated claim 19.

It is respectfully submitted that in view of the amendments and remarks set forth herein, the above rejections and objections have been overcome. Accordingly, applicants respectfully submit that pending claims 19, 21, and 26 are now in condition of allowance and such allowance is respectfully requested.

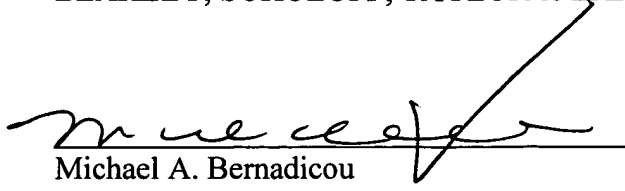
If a telephone interview would expedite the prosecution of this application, the Examiner is invited to contact Michael A. Bernadicou at (408) 720-8300.

Please charge any fees not covered by any checks submitted herewith to our Deposit
Account No. 02-2666.

Respectfully submitted,

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